<u>claims.</u>

1. A method for switching between modems, each modem being employed in an MM-MB (multimode-multiband) terminal being under a WCDMA idle state, when the MM-MB terminal moves from an overlay zone into a CDMA-2000 zone, comprising the steps of:

(a) receiving a WCDMA signal transmitted from a WCDMA system, and measuring an Ec/Io (energy of carrier/interference of others) by using the WCDMA signal;

(b) determining whether the Ec/Io is smaller than a predetermined CDMA-2000 ON threshold TH_{ON};

(c) if the Ec/Io is smaller than the TH_{ON}, driving a timer to measure a time lapse, and determining whether the time lapse exceeds a preset CDMA-2000 ON condition time H_d;

(d) if the time lapse exceeds the H_d, activating a CDMA-2000 modem; and

(e) performing an initialization for a CDMA-2000 system to switch the MM-MB terminal into a CDMA-2000 idle state.

2. The switching method of claim 1, wherein the MM-MB terminal inspects a CPICH (common pilot channel) periodically to receive the WCDMA signal at step (a).

3. The switching method of claim 1, wherein the time

lapse at step (c) is a cumulative time during which the Ec/Io is maintained smaller than the CDMA-2000 ON threshold.

4.   The method of claim 1, wherein the initialization at step (e) is performed through a system determination substate, a pilot channel acquisition substate and a synchronous channel acquisition substate.

5.   The method of claim 1, wherein, after being switched into the CDMA-2000 idle state at step (e), the MM-MB terminal controls a WCDMA modem to be inactivated.

6.   A method for switching between modems, each modem employed in an MM-MB terminal being under a WCDMA traffic state when the MM-MB terminal moves from an overlay zone into a CDMA-2000 zone, comprising the steps of:

        (a)   receiving a WCDMA signal transmitted from a WCDMA system, and measuring an Ec/Io (energy of carrier/interference of others) by using the WCDMA signal;

        (b)   determining whether the Ec/Io is smaller than a predetermined CDMA-2000 ON threshold TH_{ON};

        (c)   if the Ec/Io is smaller than the Th_{ON}, driving a timer to measure a time lapse, and determining whether the time lapse exceeds a preset CDMA-2000 ON condition time H_d;

        (d)   if the time lapse exceeds the H_d, activating a CDMA-2000 modem, and determining whether a WCDMA call is

terminated; and

(e) if the WCDMA call is determined to be terminated, performing an initialization for a CDMA-2000 system to switch the MM-MB terminal into a CDMA-2000 idle state.

7.   The method of claim 6, wherein the MM-MB terminal inspects a CPICH (common pilot channel) periodically to receive the WCDMA signal at step (a).

8.   The method of claim 6, wherein the time lapse at step (c) is a cumulative time during which the Ec/Io is maintained smaller than the CDMA-2000 ON threshold.

9.   The switching method of claim 6, wherein, if the WCDMA call is not terminated, step (d) includes the steps of:

(d1) determining whether the Ec/Io is larger than a predetermined CDMA-2000 OFF threshold TH_{OFF};

(d2) if the Ec/Io is larger than the TH_{OFF}, driving the timer to measure another time lapse, and determining whether said another time lapse exceeds a preset CDMA-2000 OFF condition time H_c; and

(d3) if said another time lapse exceeds the H_c, inactivating the CDMA-2000 modem and returning to step (a).

10.   The method of claim 9, wherein, if the Ec/Io is larger than the TH_{OFF} at step (d1), the MM-MB terminal returns to

step (d) to determine once more whether the WCDMA call is terminated.

11.   The method of claim 9, wherein said another time lapse at step (d2) is a cumulative time during which the Ec/Io is maintained larger than the CDMA-2000 OFF threshold.

12.   The method of claim 9 or 11, wherein, if the time lapse does not exceed the CDMA-2000 OFF condition time H_c, the MM-MB terminal returns to step (d) to determine once more whether the WCDMA call is terminated.

13.   The method of claim 6, wherein, if the WCDMA call is terminated, step (e) includes the steps of:
        (e1) inspecting another service channel FA (frequency assignment) of the WCDMA system;
        (e2) determining whether another WCDMA signal is inspected; and
        (e3) if said another WCDMA signal is inspected, switching the MM-MB terminal into a WCDMA idle state.

14.   The method of claim 13, wherein, if said another WCDMA signal is not inspected at step (e2), the MM-MB terminal performs an initialization into the CDMA-2000 system to be switched into a CDMA-2000 idle state.

15.   The method of claim 14, wherein, after being switched into the CDMA-2000 idle state, the MM-MB terminal controls a WCDMA modem to be inactivated.

5   16.   A method for switching between modems, each modem being employed in an MM-MB (multimode-multiband) terminal being under a CDMA-2000 idle state, when the MM-MB terminal moves from a CDMA-2000 zone into an overlay zone, comprising the steps of:

10   (a)   monitoring a paging channel periodically while maintaining the MM-MB terminal in the CDMA-2000 idle state;

      (b)   analyzing an overhead message received from a CDMA-2000 system and determining whether the MM-MB terminal is located in the overlay zone;

15   (c)   if the MM-MB terminal is determined to be located in the overlay zone, activating a WCDMA modem; and

      (d)   performing an initialization process for a WCDMA system to switch the MM-MB terminal into a WCDMA idle state.

20   17.   The method of claim 16, wherein the MM-MB terminal determines whether the MM-MB terminal is located in the overlay zone by investigating a base ID of a system parameter message included in the overhead message at step (b).

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18.   The method of claim 16, wherein, if the MM-MB terminal

is determined to be located in the overlay zone at step (b),
the MM-MB terminal returns to step (a) to monitor the paging
channel again.

5   19.   The method of claim 16, wherein, after being switched
into the WCDMA idle state, the MM-MB terminal renders a
CDMA-2000 modem inactivated.

20.   A method for switching between modems, each modem
10   being employed in an MM-MB (multimode-multiband) terminal
being under a CDMA-2000 traffic state, when the MM-MB
terminal moves from a CDMA-2000 zone into an overlay zone,
comprising the steps of:

     (a)   monitoring a paging channel periodically while
15   maintaining the MM-MB terminal in the CDMA-2000 traffic
state;

     (b)   analyzing an overhead message received from a
CDMA-2000 system and determining whether the MM-MB terminal
is located in the overlay zone;

20   (c)   if the MM-MB terminal is determined to be
located in the overlay zone, determining whether a CDMA-2000
call is terminated while maintaining the MM-MB terminal in
the CDMA-2000 traffic state;

     (d)   if the CDMA-2000 call is determined to be
25   terminated, activating a WCDMA modem; and

     (e)   performing an initialization process for a WCDMA

system to switch the MM-MB terminal into a WCDMA idle state.

21. The method of claim 20, wherein the MM-MB terminal determines whether the MM-MB terminal is located in the overlay zone by investigating a base ID of a system parameter message included in the overhead message at step (b).

22. The method of claim 20, wherein, if the MM-MB terminal is determined to be located in the overlay zone at step (b), procedure returns to step (a) to monitor the paging channel again.

23. The method of claim 20, wherein, after being switched into the WCDMA idle state, the MM-MB terminal renders a CDMA-2000 modem inactivated.

24. A multimode-multiband terminal capable of accommodating both a synchronous CDMA-2000 service and an asynchronous WCDMA service and operating in at least two frequency bands, comprising:

an RF (radio frequency) antenna for transceiving a CDMA-2000 signal and/or a WCDMA signal;

an RF transceiver for demodulating a WCDMA pilot signal received from the RF antenna and outputting the demodulated WCDMA pilot signal;

a pilot signal measurement unit for measuring an

intensity of the demodulated WCDMA pilot signal to generate

an Ec/Io;

a WCDMA modem and a CDMA-2000 modem for processing a

5   digital signal received from the RF transceiver and

performing a call processing according to protocols defined

by a WCDMA standard and a CDMA-2000 standard, respectively;

a flash memory for storing a modem-to-modem switching

program capable of performing a switching between the WCDMA

10   modem and the CDMA-2000 modem based on an Ec/Io; and

a controller for loading the modem-to-modem switching

program and activating the CDMA-2000 modem if a time lapse

during which the Ec/Io is maintained smaller than a

predetermined CDMA-2000 ON threshold TH_{ON}, is greater than a

15   preset CDMA-2000 ON condition time H_d.

25.   The multimode-multiband terminal of claim 24, wherein

the controller loads the modem-to-modem switching program at

the moment the Ec/Io starts to be smaller than the CDMA-2000

20   ON threshold or when it is determined that the multimode-

multiband terminal enters an overlay zone by analyzing

system information.

26.   The multimode-multiband terminal of claim 24, wherein,

25   after the CDMA-2000 modem is activated and an initialization

into a CDMA-2000 system is completed so that the multimode-

multiband terminal is switched into a CDMA-2000 idle state, the controller controls the WCDMA modem under operation to be inactivated.

5   27.   The multimode-multiband terminal of claim 24, wherein, even if the CDMA-2000 is activated, the controller controls the CDMA-2000 to be inactivated if a time lapse during which the Ec/Io is maintained larger than a predetermined CDMA-2000 OFF threshold TH_{OFF} is greater than a preset CDMA-2000

10   OFF condition time H_c.

28.   The multimode-multiband terminal of claim 24, wherein, after the WCDMA modem is activated and an initialization into a WCDMA system is completed so that the multimode-

15   multiband terminal is switched into a WCDMA idle state, the controller controls the CDMA-2000 modem under operation to be inactivated.

29.   The multimode-multiband terminal of claim 24 or 27,

20   wherein information upon the CDMA-2000 ON threshold TH_{ON}, the CDMA-2000 ON condition time H_d, the CDMA-2000 OFF threshold TH_{OFF} and the CDMA-2000 OFF condition time H_c are stored in the modem-to-modem switching program.

25   30.   The multimode-multiband terminal of claim 24, further comprising a timer for detecting the time lapse and

reporting the time lapse to the controller.